

**FINAL TECHNICAL REPORT**

on

**A THIRD WORKSHOP ON RELIABILITY OF NONLINEAR  
OCEAN STRUCTURES UNDER STOCHASTIC EXCITATION**

**RESEARCH PROJECT N00014-95-1-0354**

Submitted to

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by

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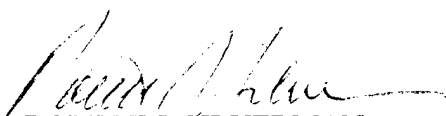
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2. Please contact me if you require additional information. My e-mail is [silverr@onr.navy.mil](mailto:silverr@onr.navy.mil) and my phone is (206) 625-3196.

  
ROBERT J. SILVERMAN

**TITLE:** A Third Workshop on Reliability of Nonlinear Ocean Structures  
Under Stochastic Excitation

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**SCIENTIFIC OFFICER:** Julia Abrahams

**Technical Objective:**

The objective of the third workshop was to facilitate the advancement of the state of knowledge on the behavior of nonlinear ocean structures under stochastic excitation. The emphasis of the workshop was on the response characteristics of significance for reliability analysis. The workshop would provide a forum for: (1) ONR supported researchers under the program on "Reliability of Nonlinear Ocean Structures Under Stochastic Excitation" and experienced Navy personnel to hold discussions and exchange ideas on current Naval needs and new research ideas and directions; and (2) the coordination of research efforts among physics, mathematical sciences, and engineering researchers under the program to achieve cross-field synergistic effects.

**Approach:**

The approach was to hold a workshop to provide a forum for the PI's and related personnel in the reliability program. Specifically, all ONR PI's directly supported under the program, other ONR supported PI's on related research topics, and personnel from various Naval centers including ONR, David Taylor Model Basin, Naval Surface Warfare Center, Naval Sea Systems Command, and Naval Facilities Engineering Service Center were invited to participate. A combined list of participants of the first and second workshops is provided in the Appendix.

**Accomplishment:** A successful workshop was held on 24-25 July 1995. PI's in mathematics, physical sciences, and engineering directly supported under the program gave presentations of their research progress and discussed their specific approaches and plans for the immediate year. ONR and other Navy personnel presented state-of-the-art theoretical and practical procedures for analysis and design of naval systems and immediate research needs for their reliability analysis. A general discussion session was held immediately after the presentations on the second day. Focus of the discussion was on naval systems modeled as stochastic differential equations with excitations that were non-Gaussian processes describing wind, wave, and current effects. The two-day workshop achieved its goals of facilitating technical knowledge exchange and the fine-tuning of the research focuses of the individual PI's in the program. A proposal for continuing the workshop in 1996 is being planned by a joint committee involving members from several universities to continue the exchange of ideas and update research progress among all the current participants as well as other national and international researchers interested in the subject.

## Appendix:

### COMBINED LIST OF FIRST, SECOND AND THIRD WORKSHOP PARTICIPANTS

Julia Abrahams, Office of Naval Research  
John Barnett, Naval Surface Warfare Center  
Haym Benaroya, Rutgers University  
G. Q. Cai, Florida Atlantic University  
Patricia Carter, Naval Surface Warfare Center  
Paul Chow, Wayne State University  
C. Allin Cornell, Stanford University  
John F. Dalzell, Naval Surface Warfare Center  
Robert Davey, Naval Sea Systems Command  
Michel Dimentberg, Worcester Polytechnic Institute  
Mingzhou Ding, Florida Atlantic University  
Scott Dobson, Worcester Polytechnic Institute  
Allen Engle, Naval Sea Systems Command  
Jeff Falzarano, University of New Orleans  
Jim Fein, Office of Naval Research  
Michael R. Frey, Bucknell University  
Allen Goldberg, Naval Research Lab  
Robert Gover, Naval Research Lab  
Steve Hammel, Naval Surface Warfare Center  
Arthur Heinricher, Worcester Polytechnic Institute  
Conor Heneghan, Columbia University  
Zhikun Hou, Worcester Polytechnic Institute  
Raouf Ibrahim, Wayne State University  
Satish Iyengar, University of Pittsburgh  
Ahsan Kareem, Notre Dame University  
Ben Kedem, University of Maryland  
Rafail Khas'minskii, Wayne State University  
Wolfgang Kliemann, Iowa State University  
Ross Leadbetter, University of North Carolina  
Shan Lin, Iowa State University  
Y. K. Lin, Florida Atlantic University  
Georg Lindgren, University of North Carolina  
L. Felipe Martins, Worcester Polytechnic Institute

Peter Majumdar, Office of Naval Research  
Dan Maudlin, University of North Texas  
Kathryn McCreight, Office of Naval Research  
Michael Monticino, University of North Texas  
John M. Niedzwecki, Texas A & M University  
Mohammad Noori, Worcester Polytechnic Institute  
Paul Palo, Naval Facilities Engineering Service Center  
Nathan Platt, Naval Surface Warfare Center  
Angel Crespo Qatz, University of Puerto Rico  
Roger Pettersson, University of North Carolina at Chapel Hill  
Steve Ramberg, Office of Naval Research  
Bill Richardson, David Taylor Model Basin  
John Rosborough, Naval Sea Systems Command  
Igor Rychlik, University of North Carolina  
Mike Shlesinger, Office of Naval Research  
Emil Simiu, National Institute of Standards & Technology  
Nozer D. Singpurwalla, George Washington University  
Tom Swean, Office of Naval Research  
Michael Tognarelli, University of Notre Dame  
Armin W. Troesch, University of Michigan  
David A. Walden, Naval Surface Warfare Center  
Timonthy Whalen, National Institute of Standards & Technology  
Bruce West, University of North Texas  
Steven R. Winterstein, Stanford University  
Solomon C. S. Yim, Oregon State University